



LANDS AND FORESTS

TECHNICAL NOTE



BRAS D'OR LAKE RAINBOW TROUT: GROWTH DATA

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INTRODUCTION

Bras d'Or Lake, in Cape Breton Island, Nova Scotia is an enclosed body of brackish water with a surface area of 1,050 Km² (378 square miles). The lake has been identified as having considerable potential for recreational fishing opportunities (Sabean, 1983). Much of this potential could be developed from rainbow trout (*Salmo gairdneri*), first stocked in the lake in 1965. Rainbow trout are also used in the aquaculture industry. A more complete description of the lake and the development of the rainbow trout fishery can be found in Sabean (1983).

This report provides some insight into rainbow trout growth rates in the Bras d'Or Lake by documenting the results of one stocking.

METHODS

Between June 6 and June 17, 1985, 14,766 rainbow trout were stocked in the northeastern portion of the Bras d'Or Lake where an angling fishery for this species exists. These fish were of the Mt. Lassen strain and when stocked at 20 months of age averaged 83 g (2.9 ounces) in weight and 19.3 cm (7.6 inches) fork length. At least one week prior to stocking, fish were marked for future identification by removal of the adipose fin. During the marking, fish were anesthetized using MS222. The fish had not been acclimated to salt-water because trials in the aquaculture industry have shown it to be unnecessary with rainbow trout of this size.

A directed creel census program was not in place but a number of marked fish were encountered and measured during regular Lands and Forests enforcement activity. Additional information was obtained from in-

cidental reporting in both 1985 and 1986. For each fish observed, fork length was recorded to the nearest 0.1 cm and weight (where possible) to the nearest 10 g. When practical, stomach contents were also examined including those of unmarked rainbows.

RESULTS

Results for lengths and weights are grouped into four time slots and presented in Table 1. Weight increased from an average of 83 g (2.9 ounces) at stocking in June to 328 g (11.6 ounces) after two months and to 1200 g (42.3 ounces) after 14 months. Lengths at the same time intervals averaged 19.3 cm (7.6 inches), 27.8 cm (10.9 inches) and 46.5 cm (18.3 inches) respectively.

Stomach analysis (N=25) revealed 80% of the trout contained only sand shrimp (*Crangon septemspinosa*) and a few scattered terrestrial insects. The remaining fish contained mostly sand shrimp with small numbers of sticklebacks (Gasterosteidae) — except for one individual, which contained primarily sticklebacks. No other food organisms were observed.

DISCUSSION

Growth rates were extremely good when compared to that of brook trout in Nova Scotia freshwater lakes as documented by Alexander and Merrill (1976) and Sabean (1980, 1982). But it was slightly less than reported in growth rate studies of rainbow trout in their sea-life phase on the west coast of North America (Carlander, 1969); this may be partly the result of a shorter growing season in Cape Breton. Little growth was evident between September/85 and April/86 in the Bras d'Or sample (Table 1).

It would appear the Bras d'Or rainbows were relying primarily on sand shrimp and sticklebacks as their forage base. Food did not appear to be a limiting factor and we saw no evidence of rainbow trout making use of two other plentiful forage species, rainbow smelt (*Osmerus mordax*) and Atlantic silversides (*Menidia menidia*). This may indicate that shrimp and to a lesser extent sticklebacks, are the more desirable or more vulnerable species. With increased intraspecific competition (i.e., more rainbows) these other prey sources may be exploited.

CONCLUSIONS

Rainbow trout stocked in June at lengths between 18 and 20 cm (7-8 inches) are capable of growing very quickly in the Bras d'Or Lake. They can be expected to contribute to the creel at weights of up to 350 g

(12 ounces) in the year of stocking. One year after stocking fish of over 1200 g (42 ounces) can be harvested — a trophy trout by Nova Scotian standards.

It was not possible to determine the percentage of fish which survived to the creel in this study. Survival should be the subject of future investigations. Work on the suitability of different strains should also be done. The authors believe that with proper management an expanded sport fishery of considerable value can be developed in the Bras d'Or Lake.

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Table 1. Length and weight of marked rainbow trout stocked in June, 1985 in the Bras d'Or Lake.

Time Period	# Measured	Average Length (Range)	Average Weight (Range)
Aug. 18-25/85	7	27.8 cm (26.0-30.0)	328 gm (290-400)
Sept. 5-Oct. 7/85	9	N.A.	340 gm*
April 19/86	5	31.9 cm (28.0-35.5)	N.A.
July 13-Sept. 6/86	5	46.5 cm (45.7-48.3)	1200 gm (1100-1300)

* These fish were taken incidentally in a mackerel net, with weights estimated by the fishermen.